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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,836	09/12/2003	John Moon	IP-0018-US (SPLG 18US)	8531
38790 7590 09/20/2007 THE SMALL PATENT LAW GROUP LLP 611 OLIVE STREET, SUITE1611 ST. LOUIS, MO 63101			EXAMINER HYUN, PAUL SANG HWA	
			ART UNIT 1743	PAPER NUMBER
			MAIL DATE 09/20/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/661,836

Applicant(s)

MOON ET AL.

Examiner

Paul S. Hyun

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) 18,33,35,36,39,43,44 and 52-57 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17,19-32,34,37,38,40-42 and 45-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/4/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

REMARKS

Claims 1-57 remain pending with claims 18, 33, 35, 36, 39, 43, 44 and 52-57 being withdrawn in accordance to the restriction requirement dated 1/04/07. In summary, only claims 1-17, 19-32, 34, 37, 38, 40-42 and 45-51 are under examination. In response the office action mailed April 4, 2007, Applicants amended claims 1, 3, 9-15, 17, 19, 20, 24, 30-32, 34 and 47-51.

The claim objections cited in the previous Office action have been withdrawn in light of the amendments.

The statutory double patenting rejections cited in the previous Office action have been withdrawn in light of the amendments.

The rejection of claims 3, 9-15, 30, 34 and 49 under 35 U.S.C. section 112 cited in the previous Office action have been withdrawn in light of the amendments.

Furthermore, the rejection of claim 37 has been withdrawn because it was erroneously rejected under 35 U.S.C. section 112. However, the rejection of claims 8 and 19 are maintained because the deficiencies of the claims have not been addressed.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir.

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1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 4-8, 19-29, 37, 38, 40-42, 45-48, 50 and 51 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 4-8, 19-29, 37, 38, 40-42, 45-48, 50 and 51 of copending Application No. 11/063,665, respectively. Although the conflicting claims are not identical, they are not patentably distinct from each other. The claims of the instant application differs from the corresponding claims of 11/063,665 in that the claims of the instant application specify that the code of the microbead extends along the body of the microbead. The claims of the instant application also recite the step of aligning the code relative to a code-reading device. However, it is evident from the claim language that the code of the microbead recited in the claims of 11/063,665 extends along the longitudinal axis of the microbead. It is also evident that the method steps of 11/063,665 naturally accomplish the act of aligning the code of the microbead relative to a code-reading device.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1, 2, 4-8, 47, 48 and 50 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 4-8, 11, 12 and 14 of copending Application No. 11/226,892, respectively. Although the conflicting claims are not identical, they are not patentably distinct from each other. The claims of the instant application differs from the corresponding claims of 11/226,892 in that the claims of the instant application specify that the code of the microbead extend along the body of the microbead. Moreover, the claims of the instant application further recite the step of aligning the code relative to a code-reading device. However, it is evident from the claim language that the code of the microbead recited in the claims of 11/226,892 extends along the longitudinal axis of the microbead. It is also evident that the method steps of 11/226,892 naturally accomplish the act of aligning the code of the microbead relative to a code-reading device.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8 and 19-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There is insufficient antecedent basis for the following limitations in the claims:

Claims 8 and 19 recite the limitation "the plate".

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Claims 8 and 19-25 cannot be examined on the merits without speculating the scope of the claims. The lack of antecedent basis for the limitations render the claimed methods indefinite because it is unclear how "the plate" relates to the other limitations recited in the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims **1, 4, 6, 7, 16, 26-29, 47, 50 and 51** are rejected under 35 U.S.C. 102(e) as being anticipated by Ravkin et al. (US 6,908,737 B2).

Ravkin et al. disclose a system for conducting assays in an array format. The system utilizes coded microbeads (see lines 29-30, col. 9) wherein the microbeads are cylindrically shaped (see lines 9-10, col. 9) and has dimensions ranging between 1-200 microns (see line 53, col. 4). Each microbead is partitioned into regions along its longitudinal axis wherein each region contains an indicia (see lines 49-59, col. 4). The reference also discloses a method for orienting a microbead to decode the microbead (see lines 50, col. 8-line 20, col. 9). The method comprises the steps of orienting a microbead in a receiver such that the viewing surface of the microbead on which the code is embedded faces a code reader, and decoding the code to determine the identity

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of the molecule bound to the microbead wherein the presence of the molecule bound to the microbead is determined by fluorescence. In one embodiment, the microbead can be decoded using a laser beam (see lines 5-50, col. 27). In another embodiment, the reader can be in the form of a CCD camera (see lines 13-34, col. 19).

Although the reference does not explicitly disclose that the microbead is aligned according to its pitch and yaw axes when it is positioned in the receiver, it is evident that it is aligned according to its pitch and yaw axes since the microbead is oriented such that the viewing surface on which the code is embedded faces the code reader.

Claims **47-49** are rejected under 35 U.S.C. 102(e) as being anticipated by Boulton et al. (US 6,027,694)

Boulton et al. disclose a microplate 10 comprising grooves in the form of wells and a shaker for agitating the microplate (see lines 43-53, col. 6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims **2, 3, 9-15, 17, 30-32, 34, 37, 38 and 40-42** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ravkin et al. in view of Seul et al. (US 2003/0082587 A1).

Ravkin et al. disclose a plate-like organizer 1300 in which the microbeads are aligned (see Fig. 13B). The organizer relies on packing of the microbeads to ensure that the microbeads are fixed (see lines 40-67, col. 18). However, the reference does not disclose a plate comprising grooves.

Seul et al. disclose a chip on which an array of microbeads is formed (see [0051]-[0053]). The reference discloses that the chip can be made from glass, a material that has high reflectivity, or a material that has minimal auto-fluorescence. Furthermore, the reference discloses that the chip comprises structural features to confine the movement of the microbeads (see [0053]) wherein the features can be machined (see [0012]) or formed by photolithography (see [0067]).

It would have been obvious to one of ordinary skill in the art to form the array of microbeads disclosed by Ravkin et al. on a chip similar to the one disclosed by Seul et al. The chip would provide a substrate on which an array of microbeads can be securely arranged.

With respect to claims 3, 17 and 42, it would have been obvious to one of ordinary skill in the art to manually agitate or position the modified Ravkin et al. chip on a rotating disk to encourage the microbeads to align in the features.

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With respect to claims 10-15, it would have been obvious to make the dimensions of the features greater than but within 5% of the dimensions of the microbeads to ensure that the microbeads are well fixed therein relative to the code reader.

With respect to claims 31 and 32, although the references do not disclose a glass plate having SU-8 thereon, given that the chip disclosed by Seul et al. are formed using photolithography and SU-8 is a well known negative photoresist, it would have been obvious to one of ordinary skill in the art to use SU-8 to form the features of the modified Ravkin et al. chip.

With respect to claims 38, 40 and 41, Seul et al. disclose that the features on the chip can be any shape that can confine the movement of the microbeads (see [0053]). In light of the disclosure, it would have been obvious to one of ordinary skill in the art to make the chip in the shape of a disk and form the features in a radial pattern to alter the capacity of the chip to a desired density.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ravkin et al. in view of Spencer et al. (US 6,242,056 B1).

Ravkin et al. does not disclose the use of holographic codes.

Spencer et al. disclose microbeads comprising holographic codes as a means to identify the microbeads (see line 38, col. 3).

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In light of the disclosure of Spencer et al., it would have been obvious to one of ordinary skill in the art to provide the microbeads disclosed by Ravkin et al. with holographic codes to provide another means to identify microbeads.

Claims **45 and 46** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ravkin et al. (US 6,908,737 B2) in view of Ravkin et al. (US 2003/0129654 A1).

'737 does not disclose microbeads with holes or protrusions.

'654 disclose coded microparticles used for tagging analytes wherein the microparticles comprise identification means in the form of surface relief features. Surface relief generally includes regular or irregular recesses and/or protrusions that extend inward or outward, respectively, along at least one axis or radius relative to adjacent particle surfaces. Exemplary surface relief features may include grooves, ridges, dimples, bumps, through-holes, pockets, projections, ripples, and/or flaps, among others, and may have any suitable shape and size. The surface relief of a particle corresponds to or at least partially determines the particle code (see [0186]).

In light of the disclosure of '654, it would have been obvious to provide the microbeads disclosed by '737 with through-holes or protrusions to provide another means to identify the microbeads.

Response to Arguments

Applicant's arguments with respect to the art rejections have been considered but are moot in view of the new grounds of rejection.

Applicants' argument that the Office action mailed on 4/4/07 is defective because claims 3, 8-15, 17, 19-25, 30-32, 34 and 49 were not examined in the merits has been fully considered but it is not persuasive. With respect to claims 3, 9-15, 30, 34 and 49, they were not examined because the claims recited the limitation "the grooves", which had no proper antecedent basis. Without a proper antecedent basis, it is unclear how "the grooves" relate to the rest of the invention in terms of structure as well as function. It is unclear whether "the grooves" are a characteristic of one of the claimed elements already recited, or if "the grooves" are a characteristic of a separate element that is distinct from the elements already recited in the claims. Due to lack of clarity, the claims were not examined on the merits. Likewise, claims 8, 9, 17, 19, 30-32, 34 and 49 were not examined because the claims recited the limitation "the plate", which had no proper antecedent basis. Without a proper antecedent basis, it is unclear how "the plate" relates to the rest of the invention in terms of structure as well as function. It is unclear whether "the plate" is referring to one of the claimed elements already recited, or if "the plate" is a separate element that is distinct from the elements already recited in the claims.

Applicants argue that the indefiniteness of the claims could have been resolved by simply interpreting the limitation "the" as "a". This argument is not persuasive because the deficiencies are not a matter of a simple grammatical error. With respect to "the grooves", the claims would remain indefinite even under the suggested interpretation because how the "grooves" relate to the rest of the claimed invention would remain unclear. It would still be unclear where the "grooves" are formed. With

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respect to "the plate", interpreting the claims as suggested by Applicants would significantly alter the scope of the claims such that the claims would no longer be commensurate with the Specification. If the claims recited "a plate", the claims would suggest that "a plate" refers to an element that is separate and distinct from the elements already recited in the claims. However, according to the Specification, "the plate" refers to the shape of "the positioning device", which is already recited in the claim. The Specification does not provide support for "a plate" that is separate and distinct from "the positioning device". If the claims were interpreted as suggested by Applicants, the claims would not be commensurate with the Specification and therefore, it would be unreasonable to interpret the claims in the manner as suggested by Applicants. For the foregoing reasons, the Examiner maintains the position that the grounds for not examining the claims were proper. Moreover, because the deficiency of claims 8 and 19 were not addressed, claims 8 and 19-25 will remain unexamined. Nonetheless, because claim 37 was not examined on the merits despite the fact that it is not indefinite, another non-final Office action will be issued.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul S. Hyun whose telephone number is (571)-272-8559. The examiner can normally be reached on Monday-Friday 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PSH
9/17/07


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